VARIX OF A PAPILLA OF THE KIDNEY A CAUSE OF PERSISTENT HEMATURIA.

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During the last few years the attention of genito-urinary surgeons has been attracted to the more obscure forms of hematuria by the reporting of a large number of cases in which no sufficient cause for bleeding was made out, in some cases even after the kidney had been removed. The classification of these cases is still chaotic and unsatisfactory.

In 1898 Mr. Hurry Fenwick reported a case of papillectomy for intermittent hematuria of five years' duration, in which the pathologist reported varicose veins in the mucous membrane covering the papilla. Since that time he has reported five cases of a somewhat similar nature in which the lesion appeared to be changes in the venous blood supply about the papillæ.

As far as I am aware no similar cases have been reported in this country. The following is a case of this apparently unusual condition:

Mr. A. B. S., aged fifty years, entered the Massachusetts General Hospital, September 27, 1907, in the service of Dr. Maurice H. Richardson, through whose courtesy I am enabled to report the case.

Thirty years ago he strained his back lifting, and immediately afterward passed what was thought to be bloody urine. From time to time since, often at considerable intervals, he has passed blood without any subjective symptoms, and has given the matter little thought. Seven months ago hematuria returned and the urine has since been bloody about one-third of the time. Five weeks ago he had sudden sharp pain in the left side about the level of the iliac crest. The pain lasted three hours, was colicky in character, tended to shoot upward and inward, and was accompanied by vomiting. There was no pain on micturition. Urine was voided two to four times a day, and three or four times at night. This is a slight increase in nocturnal frequency over previous years. This attack led his physician, Dr. E. T. Drake, of Franklin, New Hampshire, to regard the case as one of stone in the ureter.

The patient was a fairly well-developed, anemic, somewhat cachectic man. The heart sounds were regular, somewhat distant; there was no murmur, no enlargement of the heart, and the chest was otherwise normal. The abdominal examination was negative. The left inguinal glands were slightly enlarged. Rectal examination showed the prostate to be normal.

On September 27, examination of the blood revealed the hemoglobin, 70 per cent., the leukocytes 5000. A differential count was as follows: Neutrophiles, 60 per cent.; lymphocytes, 38 per cent.; and eosinophiles, 2 per cent. One normoblast was found.

On September 27, the urine was bloody in color, acid in reaction, contained a slight trace of albumin, but no sugar. The sediment was made up largely of fresh and degenerated blood corpuscles, leukocytes, and a little free fat. From this time until October 5 the urine remained practically the same. Cystoscopic examination showed a normal bladder, and blood in considerable amount coming from the left ureter, the orifice of which was normal.

The condition of the patient was such as clearly to require relief, as his anemia showed no improvement and tended to increase; x-ray examination was negative.

Operation was done October 5 by Dr. M. H. Richardson. The kidney was exposed through an oblique incision on the left side, running from the tip of the twelfth rib downward and forward. An apparently normal kidney was delivered without difficulty. Palpation of the kidney and the upper portion of the ureter failed to show anything abnormal. The patient's condition was such that a nephrotomy with its attendant possibilities of bleeding seemed to Dr. Richardson unwise, in which opinion I entirely concurred. The choice, therefore, appeared to lie between decapsulation and nephrectomy. The latter operation was decided upon and done without difficulty. The patient stood the operation well. Upon the following day he passed a good amount of urine, although it was still markedly blood stained. Two days after the operation the urine was clear and remained so up to the time of discharge from the hospital, two weeks later. On April 25, 1908, the patient reported by letter that he has been entirely well since the operation and steadily at work. The twenty-four-hour amount of urine on April 28, 1908, was twenty-seven ounces; it was free from albumin.

The kidney was submitted to Dr. William F. Whitney, who has recently reported his observation to the Obstetrical Society as follows: "I examined it at once, and in general it appeared as a somewhat pale but otherwise normal kidney. On closer inspection it was noticed that the tips of one or two of the papillæ at one end of it were reddened and a little spongy. These were cut out at once carefully and hardened in Zenker's fluid, embedded in paraffin, sectioned, mounted, and stained with eosin and methylene blue. The microscopic examination showed the small venules at the tip of the papilla dilated irregularly to twice or three times their normal size, and covered on their free surface with the finest possible film of connective tissue and a single layer of epithelial cells. Here and there they projected as varicose knuckles above the surface (Figs. 1 and 2). The conditions, in fact, were such that the slightest violence must have caused a rupture with subsequent escape of blood. In one specimen a rent was found in one of these thin-walled channels, but it cannot be stated positively that it may not have been an artifact. The lumen of the vessels, in many places, was filled with a finely granular detritus and occasional blood corpuscles, but no

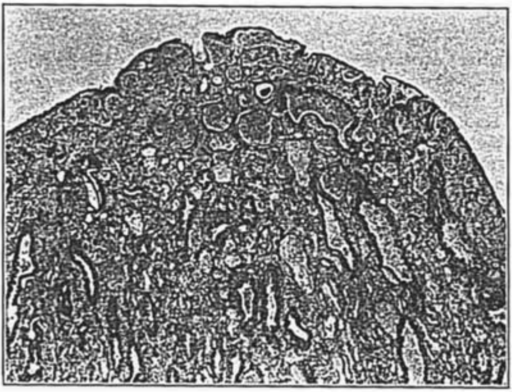

FIG. 1

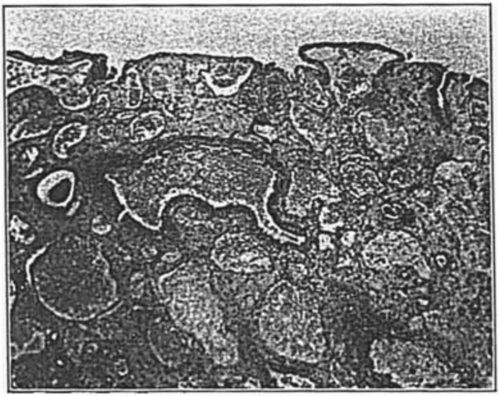

FIG. 2
Dilated venules at the tip of a renal papilla.

well-marked thrombi were seen. That the hemorrhage must have taken place here, however, is borne out by the fact that the straight tubules of this region contained blood corpuscles, which were not found higher than the base of the pyramids. The anatomical conditions described are certainly adequate to cause frequent and severe hemorrhage, for we have only to call to mind what an insignificant lesion will produce a very severe epistaxis to realize what might happen after the rupture of one of these small varicose vessels. It is interesting to find what an abundant vascular plexus there is at the apex of the normal papilla, and by what thin tissue the vessels are separated from the external surface. The size of the normal vessels, however, is very much less than in this case, so that their covering is actually and relatively very much thicker. It is only to be wondered at that hemorrhage is not much more frequent from this source, and it possibly may be and may account for blood found in the urine in some cases of congestion of the kidney."

The only other similar cases are the six of Mr. Fenwick's[1] above referred to, which are here briefly summarized:

CASE I.—March, 1898, female, aged eighteen years. Intermittent hematuria for five years. Papillectomy. On examining under water it was not villous as was supposed, but the vessels of the mucous membrane clothing the papilla were markedly varicose. Mr. Targett reported there was no evidence of growth, but there was congestion of the vessels with extravasation of blood and an increase in the cellular stroma. This might be an early stage of a fibrous condition such as is not uncommon at the tips of the papillæ.

CASE II.—September, 1899. A female with profuse hemorrhage two weeks before without any other symptoms. At operation a bright-red varicosed condition, similar to that which had been encountered in the first case, was seen. Papillectomy. Mr. Targett reported the vessels in this part of the kidney distended with blood, and some extravasations.

CASE III.—July, 1902, male, aged thirty-six years. Hematuria on slightest exertion. Pelvis opened and blood seen to issue from lower infundibulum. Sulphate of iron applied; no benefit. Nephrectomy two months later. Kidney was found in a state of subacute nephritis, possibly the result of first operation. Regards it as primarily an angiomatous papilla.

CASE IV.—Male. Hematuria for eight weeks. Operation consisted of an incision into the cortex of the lower third without entering the pelvis. Bleeding disappeared after a few days and healed rapidly. No return at the end of six months.

CASE V.—April, 1898, male, aged thirty-eight years. Ten days previous symptomless hematuria. Cystoscopy: bloody efflux from left ureter. Operation: The finger was inserted into the pelvis through a deep incision in the cortex of the lower third. Hemorrhage ceased and had not returned after a year.

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[1] Clinical Cystoscopy, London, 1904, p. 392.

CASE VI.—September, 1902, female, aged forty years. Had dark blood in her urine for two years continuously without symptoms. Operation: A deep incision made in the convexity of the cortex of the lower third. Hemorrhage persisted. Two months later nephrectomy. On dissection a dark purple papilla appeared and oozing from a bright point in the apex was a little blood. Mr. Targett reported that the cortical tissues appeared quite healthy both as regards the glandular tubules and the glomeruli, but on passing up the papilla toward the pelvis of the kidney was found an extensive dilatation of the small vessels running up the papilla. Indeed, the condition was so marked at the summit of the papilla that it constituted a capillary nevus or angioma, and many of the larger vascular channels were distended with clots. In consequence of this growth of vessels the papilla was greatly enlarged and the covering of transitional epithelium was greatly thinned or actually wanting at the apex. The capillary vessels must, therefore, have been placed in direct communication with the cavity of the pelvis of the kidney.

TREATMENT. For most cases of this condition it seems that nephrectomy is an unduly radical operation, although in the present instance it was amply justified. Decapsulation and nephrotomy are likely to be valueless, because they fail to attack the essential lesion, and if they give any benefit it is because the general congestion is diminished. Mr. Fenwick has had some success with the somewhat blind destruction of the papilla, through a short incision in the cortex, but the method is somewhat less accurate than the condition requires for satisfactory treatment.

Since in practically all of these cases it is possible to deliver the kidney so that the pelvis is readily accessible, it is at least possible that a free incision into the pelvis and exploratory pyelotomy would enable the lesion to be dealt with under direct vision. If the spongy tissue can actually be seen it would not be difficult to destroy the superficial vessels with a properly constructed electrocautery. There is, I believe, every reason to expect that future investigation will show this condition to be a not uncommon cause of hematuria. and one which can be dealt with without sacrificing the kidney.

THE PROBLEM OF IMMUNITY IN TUBERCULOSIS.[1]

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IT is my purpose to take a brief retrospect of past achievements in attempts artificially to protect against tuberculosis, and then to indicate what seems to me the special problems for the future. It must be confessed that much discouragement has resulted from the numerous experiments on animals in this direction during the past two decades. This problem has engaged the thought and labor of the foremost workers in immunity research, and it will continue to do so with the enthusiastic hope inspired by every new discovery, however little it may contribute to the ultimate object.

A review of the achievements already attained, with due credit to the authors for priority, is peculiarly difficult, and also impossible in the limits of this address. The difficulties are real because of the simultaneous experimentation in different laboratories and countries, which have independently followed similar lines impelled by the same ideas. The most important example of this common *motif* is the principle of immunization with bacteria of attenuated virulence, formulated by the immortal Pasteur and applied to tuberculosis as soon as the illustrious Koch made it possible by the discovery of the bacillus. It is noteworthy that this principle holds at present the leading place in the hope for success in the future, and it is natural that these experiments should have begun in France (Daremberg, Grancher and Ledoux-Lebard, Martin, Hericourt and Richet, and Courmont and Dor). The immediate results were discouraging; too little was known of the mechanism of immunity to make use of the crude methods then employed as a basis for thorough experimentation; and the discovery of tuberculin and antitoxins for other diseases directed attention to these fields of greater promise.

As it is not generally known that Americans engaged in the earlier experimentation with a considerable degree of success, it is appropriate that they should receive mention here. As early as 1889 Dixon made some preliminary experiments with attenuated bacilli, and Trudeau, working under exceptionally difficult conditions, produced a relatively strong immunity with cultures of avian tubercle bacilli (1892), and later with attenuated human cultures. The late Emil deSchweinitz, in 1894, had more marked success on guinea-pigs immunized with the same attenuated cultures employed in Trudeau's experiments. This period was also one of diligent but unsuccessful search for antitoxic immunity by means of divers extracts and products of the tubercle bacillus. The soluble extracts of tubercle bacilli having failed to immunize

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[1] Read at the International Congress on Tuberculosis, Washington, D.C., October 1, 1908.